Detailed Options
Anticipated Evaluation Measures

May 25, 2006

Listed below are evaluation measures (in bold typeface) that the RTA anticipates applying to future “detailed” options (not conceptual options) when developed in Summer 2006. The evaluation measures are intended to help us determine how well each Option addresses the Goals and Objectives, as well as the relative strengths and weaknesses of each. All of the measures are currently equal in weight, as no weighting scheme has been proposed.

These measures have not yet been applied or tested; it is possible that some of these measures may prove to be unusable in the Options Feasibility study, due to lack of data or other information and may need to be reserved for application in the Alternatives Analysis phase. If necessary, we will look to develop alternative evaluation measures. The RTA appreciates any feedback on these anticipated measures, suggestions for potential alternative measures, and whether a weighting scheme is desired or useful. Your feedback on these Anticipated Evaluation Measures will be shared with the Corridor’s Technical Committee.

Goal No. 1: Develop Feasible Transit Options for Reverse Commuters to Major Suburban Employment Centers

Objective 1.1: Maximize transit access to identified corridor employment centers for current and future Reverse commuters.

Measure 1.1.1: Number of current jobs within the identified Corridor employment centers that are within ½ mile radius of a transit stop / station for service which supports the reverse commute.

Utilizing GIS analysis, the number of current jobs within ½ mile of proposed transit stops or stations serving identified employment centers will be obtained from the NIPC current and future employment data. Additionally, these ½ mile radius areas will be extended to any additional portions of the employment centers served by a given transit stop or station to the extent that collector distributor bus service from the transit station / stop would provide accessibility within a given employment center beyond the ½ mile radius.

Measure 1.1.2: Number of future jobs within the identified corridor employment centers that are within ½ mile radius of a transit stop / station for service which supports the reverse commute.

Utilizing GIS analysis, the number of future jobs within ½ mile of proposed transit stops or stations serving identified employment centers will be obtained from the NIPC current and future employment data. Additionally, these ½ mile radius areas will be extended to any additional portions of the employment centers served by a given transit stop or station to the extent that collector distributor bus service from the transit station/stop would provide accessibility within a given employment center beyond the ½ mile radius.
Objective 1.2: Maximize access to additional potential places of employment.

Measure 1.2.1: Number of current jobs not within the identified Corridor employment centers within ½ mile radius of a transit stop / station for service which supports the reverse commute, west of Cicero Ave.

Utilizing market-by-market evaluation tables from the Travel Market Analysis and journey-to-work data from the Census Bureau, the number of work trip origins (throughout the length of each conceptual option) identified, as not having destinations in districts in the employment center or centers under study will be quantified.

Objective 1.3: Maximize connectivity between employment centers and residential locations of significant existing and future origin density.

Measure 1.3.1: Sum of existing and future work trip origins that connect with the identified Corridor employment centers for reverse commuters.

Utilizing GIS analysis and journey-to-work data from the Census Bureau, sum all reverse commute origins within ½ mile of a proposed option with densities greater than 250 work trips per square mile destined for identified corridor employment centers with densities greater than 250 employees per traffic analysis zone.

Objective 1.4: Maximize opportunity to serve multiple or overlapping Corridor travel markets.

Measure 1.4.1: Sum of work trips in identified travel markets with origins and destinations within ½ mile of a proposed transit option for reverse commuters.

For each option primarily serving the reverse commute, using Travel Market Analysis data and journey-to-work data from the Census Bureau, sum all work trips with origins and destinations within ½ mile of the proposed option.

Objective 1.5: Maximize opportunity to serve non-work trips.

Measure 1.5.1: Sum of non-work trips with origins and destinations within ½ mile of transit stop/station on a proposed transit option.

For each option primarily serving the reverse commute, using Travel Market Analysis data and journey-to-work data from the Census Bureau, sum all non-work trips with origins and destinations within ½ mile of the proposed option.

Objective 1.6: Maximize benefit to users of existing multimodal transportation system.

Measure 1.6.1: Extent of improvement in travel time, etc. for other users of system element affected by proposed option.

At the Options Feasibility Study level (and without the benefit of travel model runs) this evaluation will be based on a subjective assessment of the extent to which a given option provides for improved travel times on other elements within the regional transportation system.
Objective 1.7: Minimize the number of transfers.

Measure 1.7.1: Change in number of transfers, from baseline, required to reach selected employment centers from major concentrations of work trip origins for reverse commute.

For each option serving primarily the reverse commute, the sum of the number of work trips reaching designated employment centers with densities greater than 250 employees per traffic analysis zone from concentrations of work trip origins exceeding 250 trips per square mile will be determined from Travel Market Analysis data and journey-to-work data from the Census Bureau. The aggregate number of trip transfers (volume of trips multiplied by number of transfers required) will be summed for each option and options compared one to the other.

Goal No. 2: Develop Feasible Transit Options for Intersuburban Commuters to Major Suburban Employment Centers

Objective 2.1: Maximize transit access to identified Corridor employment centers for current and future commuters of Intersuburban travel markets.

Measure 2.1.1: Number of current jobs within the identified Corridor employment centers that are within ½ mile radius of a transit stop / station for service which supports the inter suburban commute.

Utilizing GIS analysis, the number of current jobs within ½ mile of proposed transit stops or stations will be obtained from NIPC current and future employment data. Additionally, these ½ mile radius areas will be extended to any additional portions of the employment center served by a given transit stop or station to the extent that collector distributor bus service from the transit station / stop would provide accessibility within a given employment center beyond the ½ mile radius.

Measure 2.1.2: Number of future jobs within the identified Corridor employment centers that are within ½ mile radius of a transit stop / station for service which supports the inter suburban commute.

Utilizing GIS analysis the number of future jobs within ½ mile of proposed transit stops or stations will be obtained from the NIPC current and future employment data. Additionally, these ½ mile radius areas will be extended to any additional portions of the employment center served by a given transit stop or station to the extent that collector distributor bus service from the transit station / stop would provide accessibility within a given employment center beyond the ½ mile radius.

Objective 2.2: Maximize access to additional potential places of employment.

Measure 2.2.1: Number of current jobs not within the identified Corridor employment centers within ½ mile radius of a transit stop / station for service which supports the inter suburban commute.

Utilizing market-by-market evaluation tables from the Travel Market Analysis and journey-to-work data from the Census Bureau, the number of work trip origins (throughout the length of each conceptual option) identified, as having destinations in districts in the employment center or centers under study will be quantified.
Objective 2.3: Maximize connectivity between employment centers and residential locations of significant existing and future origin density.

Measure 2.3.1: Sum of existing and future work trip origins served that connects with the identified Corridor employment centers for intersuburban commuters.

Utilizing GIS analysis and journey-to-work data from the Census Bureau, sum all intersuburban commute origins within ½ mile of a proposed option with densities greater than 250 work trips per square mile destined for identified corridor employment centers with densities greater than 250 employees per traffic analysis zone.

Objective 2.4: Maximize opportunity to serve multiple or overlapping Corridor travel markets.

Measure 2.4.1: Sum of work trips in identified travel markets with origins and destinations within ½ mile of proposed transit option for intersuburban commuters.

For each option primarily serving the intersuburban commute, using Travel Market Analysis data and journey-to-work data from the Census Bureau, sum all work trips with origins and destinations within ½ mile of the proposed option.

Objective 2.5: Maximize opportunity to serve non-work trips.

Measure 2.5.1: Sum of non-work trips with origins and destinations within ½ mile of transit stop/station of a proposed transit option.

For each option primarily serving the intersuburban commute, using Travel Market Analysis data and journey-to-work data from the Census Bureau, sum all non-work trips with origins and destinations within ½ mile of the proposed option.

Objective 2.6: Maximize benefit to users of existing multimodal transportation system.

Measure 2.6.1: Extent of improvement in travel time, etc. for other users of system element affected by proposed option.

At the Options Feasibility Study level (and without the benefit of transit model runs) this evaluation will be based on a subjective assessment of the extent to which a given option provides for improved travel times on other elements within the regional transportation system.

Objective 2.7: Minimize the number of transfers.

Measure 2.7.1: Change in number of transfers, from baseline, required to reach selected employment centers from major concentrations of work trip origins for intersuburban commute.

For each option serving primarily the intersuburban commute, the sum of the number of work trips reaching designated employment centers with densities greater than 250 employees per traffic analysis zone from concentrations of work trip origins exceeding 250 trips per square mile will be determined from Travel Market Analysis data and journey-to-work data from the Census Bureau. The aggregate number of trip transfers (volume of trips multiplied by number of transfers required) will be summed for each option and options compared one to the other.
Objective 3.1: Reduce travel times on I-290 (eastbound and westbound) for auto and transit users.

Measure 3.1.1: Extent option improves travel time on I-290 for eastbound automobile travel.
Identify the additional capacity on I-290 (or in immediately adjacent parallel facilities) provided by each option.

Measure 3.1.2: Extent option improves travel time on I-290 for westbound automobile travel.
Identify the additional capacity on I-290 (or in immediately adjacent parallel facilities) provided by each option.

Measure 3.1.3: Extent option improves travel time on I-290 for eastbound for transit users.
Quantification of increase in non-SOV capacity provided through extensions of rail, construction of HOV Lanes, and other regional transit service frequency improvements.

Measure 3.1.4: Extent option improves travel time on I-290 for westbound for transit users.
Quantification of increase in non-SOV capacity through extensions of rail, construction of HOV Lanes, and other regional transit services frequency improvements.

Objective 3.2: Reduce travel times on other key transportation system elements (facilities and services) relied upon by Intersuburban and Reverse commuters.

Measure 3.2.1: Extent option improves travel time on existing arterials, expressways, bus services and rail services identified in the Travel Market Analysis as key system elements in the I-290 travel corridor.
For options designed primarily to improve service quality in the I-290 travel corridor, identify capacity enhancements provided to other key system elements serving the I-290 travel corridor as defined in the Cook DuPage Corridor Travel Market Analysis.

Measure 3.2.2: Extent to which option provides an alternative routing that diverts transit and auto travelers from congested links in the home to work path now available.
Determine the cumulative number of congestion "hot spots" (defined by utilizing CATS model data, V/C ratios, etc.) avoided by a given option. Options are then scored relative to one another.

Objective 3.3: Minimize adverse impacts on users of the existing multimodal transportation system.

Measure 3.3.1: Extent of users whose travel experience may be degraded as a result of the proposed option.
Reduction in existing capacity and/or introduction of additional delay brought about by the implementation of a given option. Such introductions of delay may be those caused by an additional at grade rail crossing; the taking of a parking lane or a travel...
lane; or other actions, which similarly constitute an adverse impact on transportation system users.

Objective 3.4: Reduce travel times for multi-modal/multi-vehicle trips.

**Measure 3.4.1: Reduction in number of forced intermodal plus intramodal transfers for travelers using the I-290 travel corridor.**

For each option under study, quantify the number of total transfers required; stratify this total into intermodal transfers verses intramodal transfers. The total number of transfers for each option is then compared to the total number of transfers required for the other options.

Objective 3.5: Maximize traffic/transportation management techniques and technology strategies.

**Measure 3.5.1: Number of instances where Transportation System Management (TSM) is utilized to improve the I-290 travel corridor flow.**

For each option serving the I-290 travel corridor, enumerate the option elements, which employ transportation systems management (as opposed to major capital construction) as the technique for travel time improvement.

Objective 3.6: Improve travel experience and safety of transportation system users.

**Measure 3.6.1: Extent option improves comfort, convenience, safety and reliability for users.**

Extent to which the option provides additional corridor capacity as an alternative to SOV congested travel. This measure will be treated qualitatively based on: (a) capacity analysis computations; (b) review of existing system planning, environmental, and/or engineering documents; and, (c) on the Team’s field reconnaissance.

Goal No. 4: Maximize Community and Corridor Benefits

Objective 4.1: Minimize adverse impacts on and promote positive benefits on existing communities, neighborhoods and people.

**Measure 4.1.1: Extent and severity of incidences where well-defined communities or neighborhoods are bifurcated.**

This measure will be treated qualitatively based on an analysis of aerial photography/mapping, community comprehensive plans, and designated neighborhood plan, and on the Team’s field reconnaissance.

**Measure 4.1.2: Extent and severity of incidences where access to and/or circulation within a community or neighborhood are degraded.**

This measure will be treated qualitatively based on an analysis of aerial photography/mapping, community comprehensive plans, and designated neighborhood plan and on the Team’s field reconnaissance.

**Measure 4.1.3: Extent and number of businesses or community facilities dislocated or rendered less accessible.**
This measure will be treated qualitatively based on an analysis of aerial photography/mapping, community comprehensive plans, and designated neighborhood plan and on the Team’s field reconnaissance.

**Measure 4.1.4: Extent and number of residences dislocated or rendered less accessible.**

This measure will be treated qualitatively based on an analysis of aerial photography/mapping, community comprehensive plans, and designated neighborhood plan, and on the Team’s field reconnaissance.

**Measure 4.1.5: Number of rail grade crossing.**

Measure to be qualitatively assessed as a function of aggregate delay and aggregate accident exposure (as well as number of rail grade crossings) on each option. Options will then compared one to the other.

**Objective 4.2: Enhance economic development / redevelopment opportunities.**

**Measure 4.2.1: Area of brownfields slated for redevelopment within ½ mile of a transit stop / station or point of access to a new or improved roadway.**

Utilizing GIS analysis, the acreage of brownfields within ½ mile of a transit stop or station, on the one hand, or the point of access to a major roadway improvement, on the other, will be quantified for each option. All options will be scored, on a relative basis.

**Measure 4.2.2: Area of existing and proposed employment centers within ½ mile of a transit stop / station or point-of-access to a new or improved roadway.**

Utilizing GIS analysis, the acreage of employment centers within ½ mile of a transit stop or station on the one hand or the point of access to a major roadway improvement on the other will be quantified for each option. All options will be scored, on a relative basis.

**Measure 4.2.3: Number of targeted redevelopment sites accessed.**

Number of targeted redevelopment sites accessed by option under study. Number of redevelopment sites within ½ mile of a transit stop or station on the one hand or the point of access to a roadway improvement on the other defines access. All options will be scored, on a relative basis.

**Measure 4.2.4: Number of centers of projected new development accessed.**

Number of targeted new development sites accessed by option under study. Number of new development sites within ½ mile of a transit stop or station on the one hand or the point of access to a roadway improvement on the other defines access.

**Objective 4.3: Consider extent of and minimize adverse impacts of land acquisition.**

**Measure 4.3.1: Classification of land impacted and area of new right-of-way required (includes related parking, roadway, and traffic improvements).**

Utilizing GIS analysis, total area of new right-of-way required will be accumulated by major land use classifications and the total across all classifications recorded.

**Objective 4.4: Maximize achievement of Corridor Planning Standards.**
Measure 4.4.1: To Be Determined.
To be determined.

Goal No. 5: Maximize Regional Benefits

Objective 5.1: Maximize use of and integration with regional transportation system.

Measure 5.1.1: Extent of interconnectivity of option with all other elements of existing transportation systems for all travel markets.
This measure will be based on a visual assessment of the interconnectivity of CTA rail, CTA bus, Metra, and Pace System maps taken in combination with each proposed conceptual option.

Objective 5.2: Ensure consistency with regional goals presented in the 2030 RTP and 2040 Regional Framework Plan.

Measure 5.2.1: Total number of 2030 RTP and 2040 Regional Framework Plan goals consistent with option.
Enumerate the apparent number of inconsistencies (for each conceptual option) with respect to goals statements in the current CATS 2030 Regional Transportation Plan and Current NIPC 2040 Regional Framework Plan.

Objective 5.3: Minimize negative impacts on environmental justice communities/populations.

Measure 5.3.1: Number of housing units adversely impacted by noise, vibration or visual intrusion.
Number of environmental justice housing impacts will be quantified based on GIS analysis and aerial photography/mapping of environmental justice neighborhoods, and on review of existing planning or environmental documents and by Team’s field reconnaissance.

Measure 5.3.2: Number of environmental justice neighborhoods or communities divided.
Number of environmental justice neighborhoods or communities impacted will be quantified based on GIS analysis and aerial photography/mapping of environmental justice neighborhoods, and on review of existing planning or environmental documents and by Team’s field reconnaissance.

Measure 5.3.3: Number of environmental justice or businesses dislocated.
Quantification of number of environmental justice homes or businesses dislocated by each option will be quantified based on GIS analysis and aerial photography/mapping of environmental justice neighborhoods, and on review of existing planning and environmental studies, supplemented by Team’s field reconnaissance.
Objective 5.4: Maximize access to disadvantaged communities / populations.

Measure 5.4.1: Number of disadvantaged persons within a ½ mile radius of a transit stop/station or point-of-access to a new or improved roadway.

Using GIS analysis, quantify the number of disadvantaged persons (households with zero automobiles, households with disabled individuals, households with family income below the national poverty level, elderly households, and households occupied by minority groups) by each conceptual option.

Goal No. 6: Minimize Adverse Environmental Impacts

Objective 6.1: Ensure all applicable air quality standards are met.

Measure 6.1.1: Does option improve compliance with current air quality standards?

Number of roadway congestion "hot spots" potentially eliminated or significantly improved by implementation of the option under study.

Objective 6.2: Avoid / minimize adverse impacts to wetlands, floodplains, and critical habitats.

Measure 6.2.1: Number of wetlands, floodplains, and critical habitats impacted.

Utilizing GIS analysis, enumerate the number of wetlands, or critical habitats impacted by each proposed option.

Objective 6.3: Minimize operating noise and vibration levels.

Measure 6.3.1: Number of sensitive receptors (e.g., schools, hospitals) subjected to increased noise and vibration impacts.

Utilizing GIS analysis, enumerate the number of sensitive receptors (e.g., schools, churches, hospitals) subjected to increased noise and vibration impact for each option under study.

Objective 6.4: Avoid / minimize adverse impacts to sensitive land uses, historic properties and open space.

Measure 6.4.1: Length of option running through or adjacent to a park, historic district or property, or public open space.

Utilizing GIS analysis, for each option under study, the length of an option running through or adjacent to a park or public open space will be determined and accumulated.

Goal No. 7: Maximize Cost Effectiveness

Objective 7.1: Maximize system value by balancing costs and benefits.
**Measure 7.1.1**: Divide option’s effectiveness (as computed in the evaluation matrix for goals 1 thru 6) by the option’s total annual costs (capital + operating --in billions).
To be computed as described in the Draft Evaluation Methodology and Options Evaluation Matrix document.

**Objective 7.2**: Minimize construction costs.

**Measure 7.2.1**: Total construction costs.
Order of Magnitude capital construction and equipping costs will be computed for each option under study.

**Measure 7.2.2**: Annualized construction costs (all modal components)
Based on life cycle costing methods (as suggested by FTA or the sponsoring agency) the annualized construction costs for each option will be computed.

**Objective 7.3**: Minimize long-term operating costs.

**Measure 7.3.1**: Annual operating costs (all modal components).
Based on operating cost data available (through RTA; from the modal operating agency; or, based on the national transit database), estimates of annual operating costs will be made for each conceptual option under study.

**Objective 7.4**: Maximize potential benefits.

**Measure 7.4.1**: Overall effectiveness (as computed in the evaluation matrix for goals 1 thru 6).
The Feasible Options Study evaluation methodology and resulting matrix provides a cumulative measure of overall plan effectiveness for each option under study. This measure of effectiveness is computed for each of goals 1 through 6 and then aggregated for all six goals.

**Objective 7.5**: Maximize compatibility with the capacity of existing, local, state, and federal funding sources for both capital and operating costs.

**Measure 7.5.1**: Option’s horizon year cash surplus (through a cash-flow model, which incorporates both capital costs and operating costs with reasonable expectation of revenues from all fund sources).
The Team (at the level of Conceptual Options Evaluation) will undertake a very generalized cash flow analysis for each conceptual option under study. This analysis will consider, on an annual basis, all capital and operating costs as well as all potential revenue sources (local and sales taxes, fare box, State of Illinois, tolls, FTA, etc.). The cash flow analysis is carried out through each year to the planning horizon year. The single number reflective of the level of financial feasibility of each option is the cash surplus (or deficit) which exists at the planning horizon year. This "bottom line" number is inclusive of short term borrowing (such as bond, grant anticipation notes (GANS), or grant anticipation revenue vehicles (GARVEES) and long term financing issued and paid back during the options development horizon which is assumed to be the year 2030 consistent with the horizon year for the build out of the 2030 Regional Transportation Plan.

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